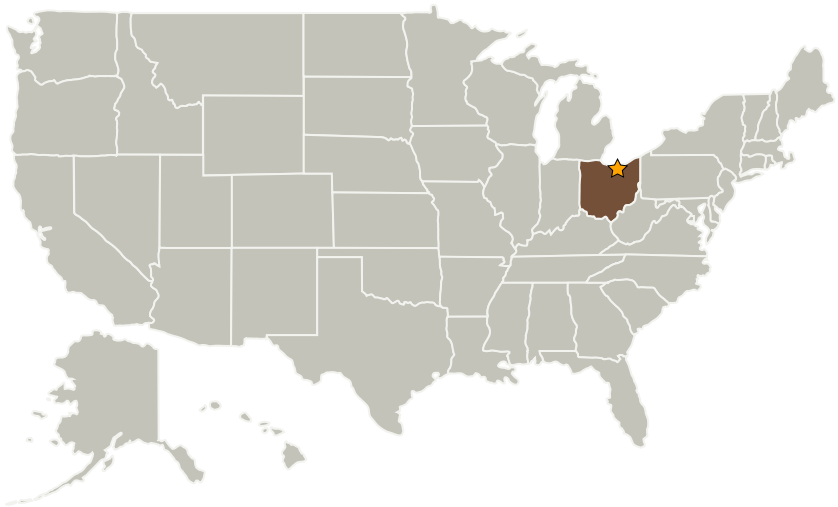
In-Service Aircraft Transmission Life Modeling for Improved Flight Safety, Phase II

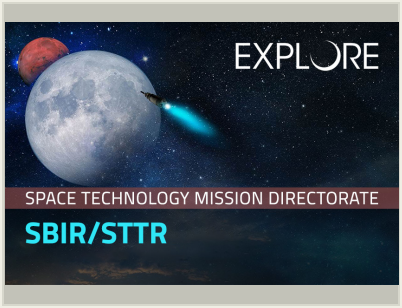
Completed Technology Project (2004 - 2006)

Project Introduction

It is proposed to develop an accurate, in-service transmission life-use estimation system for the prediction of remaining component and system life for a helicopter transmission system. Once proven in the helicopter environment, this life- use estimation system will be of use to a wide variety of transmission systems. The transmission-life estimating system will include three separate algorithms: an in-flight service monitoring algorithm, a pre-flight and post-flight transmission analysis algorithm, and a component-life tallying algorithm. The in-flight service monitor will treat the transmission as a whole. The transmission analysis algorithm will determine the transmission's operating parameters from those of its components. It also will determine the life and reliability of the individual components. The component-life algorithm will accumulate life and reliability tables. The Phase I effort developed the algorithms. In the Phase II effort, the life-use monitor algorithm will be placed in its appropriate hardware and flown in a commercial helicopter to provide an improvement in that aircraft's safety. Maintenance record comparisons will be made between the predicted maintenance intervals and the present maintenance pattern for the aircraft. Any increase in flight safety will be documented. The deliverable product of the Phase II effort will be the on-board life-use monitor.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Nastec, Inc.	Supporting Organization	Industry	Brook Park, Ohio

Primary U.S. Work Locations
Ohio

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Project Manager:
Richard J Keegan

Principal Investigator:
Janet E Petro

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.3 Power Management and Distribution
    - TX03.3.2 Distribution and Transmission